Amendments to the Claims

Please amend the claims as follows:

1. (Currently Amended) A magnetic resonance imaging method to produce successive magnetic resonance images of a region of a subject comprising the steps of ~~wherein~~:

exposing the body of a subject to a uniform magnetic field,

obtaining a series of successive magnetic resonance signals of the region of the subject ~~is obtained~~ by steady-state free precession imaging,

acquiring successive sets of the magnetic resonance signals in the series ~~are acquired~~ by successively scanning respective sets of points in k-space in an undersampled fashion,

the step of acquiring including employing an eddy-current reduction technique, and ~~the magnetic resonance signals in the series are acquired in conjunction with an eddy-current reduction technique, and~~

reconstructing successive magnetic resonance images of the region ~~are reconstructed~~ from the successive sets of magnetic resonance signals using a suitable reconstruction method.

2. (Original) A magnetic resonance imaging method as claimed in Claim 1, wherein the eddy-current reduction technique employs alternating sweep directions in sampling k-space.

3. (Currently Amended) A magnetic resonance imaging method as claimed in Claim 1, further comprising: ~~wherein~~

the step of acquiring the successive sets of magnetic resonance signals ~~are acquired by~~ including successively scanning respective sets of points in k-space in an undersampled fashion such that the ensemble of successive sets cover the entire portion of k-space at full sampling density,

obtaining successive updates of a training set of magnetic resonance signals ~~are obtained~~ from the magnetic resonance signals~~, either in the same scan or in a separate scan,~~ by further acquisition of a ~~of the~~ central portion of k-space at full sampling density, ~~or with slight undersampling if multiple receiver antennae are used,~~

updating the undersampled sets of magnetic resonance signals using ~~are successively updated by~~ further undersampled scans of the entire k-space,

reconstructing a baseline image ~~is optionally reconstructed~~ from the training data ~~and/or undersampled data, or from data acquired separately during time periods with little or no motion~~,

identifying a distribution of a likelihood of changes in the successive magnetic resonance images ~~is identified~~ from ~~the static reference image and/or~~ the training data, in the space spanned by geometrical space ~~alone or by geometrical space and temporal frequency~~,

reconstructing successive magnetic resonance images ~~are reconstructed~~ from the respective sets of undersampled magnetic resonance signals on the basis of the identified distribution of likelihood of changes~~, and optionally the baseline image~~, and wherein

the step of acquiring including acquiring the magnetic resonance signals ~~are optionally acquired~~ by way of a receiver antennae system having a spatial sensitivity profile, and

the step of reconstructing further including reconstructing the successive magnetic resonance images ~~are reconstructed~~ from the respective sets of undersampled magnetic resonance signals based in part on the ~~on the additional and optional basis of the~~ sensitivity profile of the receiver antennae.

4. (Currently Amended) A magnetic resonance imaging method as claimed in Claim 1 wherein the step of acquiring magnetic resonance signals further including employing ~~are acquired by way of~~ a receiver antennae system having a spatial sensitivity profile, and

the step of reconstructing including reconstructing successive magnetic resonance images ~~are reconstructed~~ from the respective sets of undersampled magnetic resonance signals on the basis of the sensitivity profile of the receiver antennae.

5. (Currently Amended) A magnetic resonance imaging method as claimed in Claim 1 further comprising ~~wherein~~ the step of reconstructing successive magnetic resonance images ~~are reconstructed~~ from the respective sets of undersampled magnetic resonance signals including utilizing ~~on the basis of~~ a

reduced field of view, where changes in image contents are assumed to take place.

6. (Previously presented) A magnetic resonance imaging method as claimed in Claim 1, wherein an elliptical k-space shutter is applied.

7. (Previously presented) A magnetic resonance imaging method as claimed in Claim 1, wherein navigator-based volume tracking is applied.

8. (Currently amended) A magnetic resonance imaging method for producing successive magnetic images of a region of a static subject comprising the steps of:[[of]]

exposing the body of a subject to a uniform magnetic field,

obtaining a series of successive ~~subsequent~~ magnetic resonance signals by steady-state free precession imaging[[,]] of a region of the subject,

acquiring a set of magnetic resonance signals in an undersampled fashion by successively scanning respective sets of points in k-space, including applying an eddy-current reduction technique, such as by alternating the sweep directions of sampling in k-space,

~~acquiring a set of magnetic resonance signals in an undersampled fashion,~~

~~optionally~~ acquiring the magnetic resonance signals by way of a receiver antennae system having a spatial sensitivity profile,

~~optionally acquiring an additional training set of magnetic resonance signals,~~

~~optionally reconstructing a baseline image from the training data and/or undersampled data, or from data aquired separately during time periods with little or no motion,~~

~~optionally identifying a distribution of likelihood of changes in the successive magnetic resonance images from the baseline image and/or the training data, in the space spanned by geometrical space alone or by geometrical space and temporal frequency,~~

~~optionally~~ reconstructing the successive magnetic resonance images from the respective sets of magnetic resonance signals of the dynamic series including ~~on the basis of~~ at least one of the steps of:

~~the identified~~ identifying a distribution of likelihood of changes in the successive magnetic resonance images from a baseline image,

~~the baseline image,~~

basing the reconstructing of successive magnetic resonance images in part on the sensitivity profile of the receiver antennae, and

including utilizing a reduced field of view, where changes in image contents are assumed to take place.

~~the sensitivity profile of the receiver antennae, and/or~~

~~a reduced field of view where changes in image contents are assumed to take place.~~

9. (Currently Amended) A computer application stored on a computer-readable medium ~~program product~~ for producing successive magnetic resonance images of a region of a subject, the computer application comprising executable ~~comprising instructions to~~ instructions to:

obtain a series of subsequent magnetic resonance signals of a region of a subject by steady-state free precession imaging,

apply an eddy-current reduction technique, such as by alternating the sweep directions of sampling in k-space,

acquire a set of magnetic resonance signals in an undersampled fashion, and

reconstruct successive magnetic images of the region from the successive sets of magnetic resonance signals.

~~optionally acquire the magnetic resonance signals by way of a receiver antennae system having a spatial sensitivity profile,~~

~~optionally acquire an additional training set of magnetic resonance signals,~~

~~optionally reconstruct a baseline image from the training data and/or undersampled data, or from data aquired separately during time periods with little or no motion,~~

~~optionally identify a distribution of likelihood of changes in the successive magnetic resonance images from the baseline image and/or the~~

~~training data, in the space spanned by geometrical space alone or by geometrical space and temporal frequency,~~

~~optionally reconstruct the successive magnetic resonance images from the respective sets of magnetic resonance signals of the dynamic series on the basis of:~~

~~the identified distribution of likelihood of changes~~

~~the baseline image,~~

~~the sensitivity profile of the receiver antennae, and/or~~

~~a reduced field of view where changes in image contents are assumed to take place.~~

10. (New) The computer application in accordance with claim 9 wherein the magnetic resonance signals are acquired using a receiver antennae system having a spatial sensitivity profile.

11. (New) The computer application in accordance with claim 9 further including instructions for obtaining successive updates of a training set of magnetic resonance signals from the magnetic resonance signals by further acquisition of a central portion of k-space at full sampling density.

12. (New) The computer application according to claim 11 including instructions for reconstructing a baseline image from one of the undersampled signals, the training set of signals, and data acquired separately during periods with little or no motion.

13. (New) The computer application according to claim 12 including instructions for reconstructing the successive magnetic resonance images from the magnetic resonance signals based in part on the baseline image.

14. (New) The computer application according to claim 9 further including instructions for identifying a distribution of a likelihood of changes in the successive magnetic resonance images from the training set in the space spanned by geometrical space or geometrical space and temporal frequency wherein the instructions for reconstructing the successive magnetic images of

the region from the successive sets of magnetic resonance signals are based in part on the distribution of likelihood of changes.

15. (New) The computer application according to claim 9 wherein the instructions for reconstructing the successive magnetic images of the region from the successive sets of magnetic resonance signals include utilizing a reduced field of view where changes in image content are assumed to take place.